


## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

08 MAR 2005

Applicant's or agent's file reference 766.42647A00	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US03/10238	International filing date (day/month/year) 04 April 2003 (04.04.2003)	Priority date (day/month/year)
International Patent Classification (IPC) or national classification and IPC IPC(7): B01D 50/00, 45/14 and US Cl.: 95/268,270; 55/385.3, 396,337,423,401,437,457,467,503		
Applicant SY-KLONE COMPANY, INC.		
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>3</u> sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of <u>2</u> sheets.</p>		
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of report with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>		
Date of submission of the demand 03 November 2004 (03.11.2004)	Date of completion of this report 09 December 2004 (09.12.2004)	
Name and mailing address of the IPEA/US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer Robert A Hopkins  Telephone No. 703-872-9306	

**I. Basis of the report****1. With regard to the elements of the international application:\***

- ☐ the international application as originally filed.
- ☒ the description:  
pages 1-10 as originally filed  
pages NONE, filed with the demand  
pages NONE, filed with the letter of \_\_\_\_\_.
- ☒ the claims:  
pages 12-15, as originally filed  
pages NONE, as amended (together with any statement) under Article 19  
pages 11,16, filed with the demand  
pages NONE, filed with the letter of \_\_\_\_\_.
- ☒ the drawings:  
pages 1-7, as originally filed  
pages NONE, filed with the demand  
pages NONE, filed with the letter of \_\_\_\_\_.
- ☐ the sequence listing part of the description:  
pages NONE, as originally filed  
pages NONE, filed with the demand  
pages NONE, filed with the letter of \_\_\_\_\_.

**2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.**

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

**3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:**

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

**4. ☒ The amendments have resulted in the cancellation of:**

- ☒ the description, pages NONE
- ☒ the claims, Nos. NONE
- ☒ the drawings, sheets/fig NONE

**5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\***

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

**V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. STATEMENT**

Novelty (N)	Claims <u>1-24</u>	YES
	Claims <u>NONE</u>	NO
Inventive Step (IS)	Claims <u>1-24</u>	YES
	Claims <u>NONE</u>	NO
Industrial Applicability (IA)	Claims <u>1-24</u>	YES
	Claims <u>NONE</u>	NO

**2. CITATIONS AND EXPLANATIONS**

Claims 1-14 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest an air filter being elongated in the direction of the axis about which the debris laden air is rotated.

Claims 15 and 16 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest a debris strake connected to the air filter for channeling debris away from the filter to the outermost orbits of the rotating flow.

Claims 17-21 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest channeling debris away from the filter to the outermost orbits of the rotating flow with a debris strake connected to the filter.

Claims 22-24 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest wherein the air filter is swept by the rotating flow to provide a self cleaning action on the filter.

Claims 1-24 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in the air filter industry.

----- NEW CITATIONS -----

CLAIMS

WHAT IS CLAIMED IS:

1. A powered air cleaning system comprising:

a flow path extending through the system from an inlet to an outlet;

5 a motor-driven fan located along the flow path to draw particulate debris laden air into the inlet and rotate it about an axis to form a rotating flow that stratifies the debris laden air with the heaviest particles in the outermost orbits of the rotating flow;

an ejector port for ejecting particulate debris laden air from the stratified rotating flow in the system; and

10 an air filter located within the rotating flow and across the flow path upstream of the outlet for filtering air from the innermost orbits of the stratified rotating flow, the air filter being elongated in the direction of the axis about which the debris laden air is rotated;

wherein the ejector port is located radially outward of the outermost orbits of  
15 the rotating flow.

2. The air cleaning system according to claim 1, wherein the filter is located centrally within a separator-ejector chamber in the flow path of the air cleaning system.

20 3. The air cleaning system according to claim 1, wherein the ejector port is elongated in a direction along the length of the elongated filter.

4. The air cleaning system according to claim 1, wherein an outer  
25 peripheral surface of the elongated filter is cylindrical.

forming a rotating flow of the debris laden air in the system at a positive air flow pressure to stratify the flow with the heaviest particles in the outermost orbits of the rotating flow;

5 ejecting particulate debris laden air from the outermost orbits of the stratified, positively pressured rotating flow in the system through an ejector port located radially outward of the outermost orbits of the rotating flow; and

10 withdrawing air from the innermost orbits of the rotating flow in the system through an air filter and an outlet of the system by applying a vacuum to the outlet, wherein the air filter is swept by the rotating flow to provide a self cleaning action on the filter.

23. The method according to claim 22, including operating the motor-driven fan to maintain the positive air flow pressure to eject particulate debris laden air from the outermost orbits of the stratified rotating flow in the system at all rates of  
15 withdrawal of air through the outlet of the system.

24. The method according to claim 22, wherein the ejector port is in the form of a slot in a housing containing the rotating flow, the slot extending in a direction transverse to the direction of rotation of the rotating flow.

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